

WHAT IS CLAIMED IS:

1. A homogeneous, thermoreversible gel film comprising a film forming amount of kappa-2 carrageenan, and optionally at least one of a plasticizer, a second film former, a bulking agent, and a pH controlling agent.
2. The film of claim 1, further comprising at least one of potassium or ammonium cation in an amount less than 50% by dry weight of the kappa-2 carrageenan in the gel film.
3. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of at least 0.5% by dry weight of the gel film.
4. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of 0.5% to 25% by dry weight of the gel film.
5. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of 1.5% to 25% by dry weight of the gel film.
6. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of at least 10% of the total dry weight of film formers in the gel film.

7. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of at least 20% of the total dry weight of film formers in the gel film.

8. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of at least 50% of the total dry weight of film formers in the gel film.

9. The film of claim 1, wherein said kappa-2 carrageenan is present in an amount of at least 80% of the total dry weight of film formers in the gel film.

10. The film of claim 1, wherein said kappa-2 carrageenan is the only film former present in the gel film.

11. The film of claim 1, wherein said second film former is selected from the group consisting of starch, starch derivative, starch hydrozylate, cellulose gums, kappa carrageenan; iota carrageenan; alginates, propylene glycol alginate, polymannan gums, dextran, pectin, gellan, pullulan, alkylcellulose ethers and modified alkyl cellulose ethers.

12. The film of claim 1, wherein said plasticizer is at least one member selected from the group consisting of glycerin, sorbitol, polydextrose, maltitol, lactitol, and polyalkylene glycols; said second film former is at least one member selected from the group consisting of a starch, starch derivative, starch hydrozylate, cellulose gum, hydrocolloid, an alkylcellulose ether and a modified alkyl cellulose ether; and said bulking agent is at least one member selected from the group consisting of

microcrystalline cellulose, microcrystalline starch, starch, starch derivatives, inulin, starch hydrozylates and polydextrose.

13. The film of claim 1, having a break force strength of at least 1,500 grams.
14. The film of claim 1, having a break force strength of at least 4,000 grams.
15. The film of claim 1, having a break force strength of at least 5,000 grams.
16. The film of claim 1, having a break force strength of at least 6,000 grams.
17. The film of claim 1 having a solids content of at least 50% by weight of the gel film.
18. The film of claim 1 having a solids content of at least 60% by weight of the gel film.
19. The film of claim 1 having a solids content of at least 80% by weight of the gel film.
20. The film of claim 1 having a solids content of at least 90% by weight of the gel film.

21. A process for making the gel films of claim 1-20, comprising the step of:

(i) heating, hydrating, mixing, solubilizing and, optionally, de-aerating a composition of said kappa-2 carrageenan and optionally at least one of said plasticizer, said second film former, said bulking agent and said pH controlling agent in an apparatus providing sufficient shear, temperature and residence time to form a homogeneous, thermoreversible, molten composition thereof, wherein said temperature is at or above the solubilizing temperature of the molten composition; and

(ii) cooling said molten composition at or below its gelling temperature to form the gel film.

22. The process of claim 21, wherein said molten composition is fed directly into at least one of a mixer, pump or devolatilizer prior to cooling.

23. The process of claim 21, wherein said apparatus is a Ross mixer, Stephan processor, extruder, jet cooker or fluid mixing apparatus.

24. Soft capsules comprising capsule walls and an encapsulated substance wherein said capsule walls comprise the films of any of claims 1-20.

25. The soft capsules of claim 24, wherein said encapsulated substance is at least one member selected from the group consisting of pharmaceuticals, vitamins, nutritional supplements, paint, paintballs, pigments, agriculturals, cosmetics, antioxidants, flavorant or food.

26. A process for making the soft capsules of claim 24 comprising the steps of:

(i) heating, hydrating, mixing, solubilizing and, optionally, de-aerating a composition of said kappa-2 carrageenan and optionally at least one of said plasticizer, said secondary film former, said bulking agent and said pH controlling agent in an apparatus providing sufficient shear, temperature and residence time to form a homogeneous, molten composition thereof, wherein said temperature is at or above the solubilizing temperature of the molten composition; and

(ii) making soft capsules directly from said molten composition or allowing said molten composition to cool to its gelling temperature or below and thereafter making soft capsules therefrom.

27. The process of claim 26, wherein said apparatus is a Ross mixer, Stephan processor, extruder, jet cooker or fluid mixing apparatus.

28. The process of claim 26, wherein said molten composition is fed directly into at least one of a mixer, pump or devolatilizer prior to making soft capsules.

29. The process of claim 26, wherein said molten composition has a solids content of at least 50% prior to making soft capsules.

30. The process of claim 26, wherein said gel film has a solids content of at least 60% prior to making soft capsules.

31. A solid form comprising a fill material encapsulated by the homogeneous, thermoreversible gel film of any of claims 1-20.
32. The solid form of claim 31, wherein said fill material is a powder, tablet, caplet, microcapsule or capsule.
33. The solid form of claim 31, wherein said solid form is a hard capsule.
34. The film of claim 1, comprising 0.5 to 25 wt % kappa-2 carrageenan, 10 to 50 wt% second film former, 5 to 40 wt % plasticizer, and a solids content of 50 to 90%, all by weight of the gel film, and optionally, a pH control agent.
35. A soft capsule comprising the film of claim 34 encapsulating a fill material.
36. The film of claim 1 having a solids content of at least 50% and said kappa-2 carrageenan has a viscosity of less than 10 cps at 75 °C in a 1.5% kappa-2 carrageenan solids 0.10 molar sodium chloride solution.
37. A soft capsule comprising the film of claim 36 encapsulating a fill material.
38. The gel film of claim 1 further comprising a flavorant and a solids content of at least 50%.

39. A soft capsule comprising the film of claim 38 encapsulating a fill material.
40. The gel film of claim 38, wherein said flavorant is sugar.